

=> d his

(FILE 'HOME' ENTERED AT 11:07:00 ON 11 FEB 2008)  
FILE 'CA' ENTERED AT 11:07:08 ON 11 FEB 2008  
L1 109551 S CREOSO? OR TAR OR(POLYCYCLIC OR POLYNUCLEAR)(W)(AROMATIC OR  
AROM)(W)HYDROCARBON OR PAH  
L2 28384 S (SOIL OR CLAY OR SAND)(4A)(PARTITION? OR ADSOR? OR ABSOR?)  
L3 369 S L1 AND L2  
L4 20193 S (WATER OR H2O OR AQUEOUS)(4A)PARTITION?  
L5 483 S L1 AND L4  
L6 44 S L3 AND L5  
L7 23 S L3 AND(RISK OR ENVIRONMENTAL FACTORS)  
L8 40 S L3 AND (NONEEXTRACT? OR NON EXTRACT? OR (DESOR? AND(ADSOR? OR  
ABSOR?)))  
L9 72 S L6-8 AND PY<2004  
FILE 'ENCOMPLIT' ENTERED AT 11:20:00 ON 11 FEB 2008  
L10 24 S L9  
FILE 'CA, ENCOMPLIT' ENTERED AT 11:20:51 ON 11 FEB 2008  
L11 88 DUP REM L9 L10 (8 DUPLICATES REMOVED)

=> d bib,ab 111 1-88

L11 ANSWER 4 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 139:234485 CA  
TI Evidence for Very Tight Sequestration of BTEX Compounds in Manufactured  
Gas Plant Soils Based on Selective Supercritical Fluid Extraction and  
Soil/Water Partitioning  
AU Hawthorne, Steven B.; Miller, David J.  
CS Energy and Environmental Research Center, University of North Dakota,  
Grand Forks, ND, 58201, USA  
SO Environmental Science and Technology (2003), 37(16), 3587-3594  
AB Benzene, toluene, ethylbenzene, o-, m-, and p-xylenes (BTEX), and  
polycyclic arom. hydrocarbons (PAHs) were extd. from eight manufd. gas  
plant (MGP) soils from sites that had been abandoned for several  
decades. Supercrit. fluid extn. (SFE) with pure carbon dioxide  
demonstrated the presence of BTEX compds. that were highly sequestered  
in both coal gas and oil gas MGP soils and soots. Benzene was generally  
the slowest compd. to be extd. from all samples and was even more  
difficult to ext. than most two- to five-ring PAHs found in the same  
samples. Since the soly. of benzene in carbon dioxide is 2-5 orders of  
magnitude higher than the solubilities of PAHs, these results  
demonstrate that benzene was more tightly sequestered than toluene,  
ethylbenzene, xylenes, or the multi-ring PAHs. Addnl. evidence for very  
tight binding was based on the fact that BTEX concns. detd. using either  
SFE or with methylene chloride sonication were much higher than those  
obtained by the US EPA purge-and-trap method, esp. for benzene (whose  
concn. was underestd. by as much as 1000-fold by the EPA method).  
However, soil/water desorption showed little benzene mobility, and Kd  
values for benzene were 1-2 orders of magnitude higher than those calcd.  
based on literature sorption KOC values. These results indicate that  
environmentally relevant concns. of benzene may be better represented by  
mild extn. methods than by methods capable of extg. tightly bound  
benzene.

L11 ANSWER 10 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 138:122134 CA  
TI Concentration-dependent kinetics of pollutant desorption from soils  
AU Braidia, Washington J.; White, Jason C.; Zhao, Dongye; Ferrandino,  
Francis J.; Pignatello, Joseph J.  
CS The Connecticut Agricultural Experiment Station, New Haven, CT, 06504-  
1106, USA  
SO Environmental Toxicology and Chemistry (2002), 21(12), 2573-2580  
AB Sorption-desorption kinetics play a major role in transport and  
bioavailability of pollutants in soils. Contaminant concn. is a  
potentially important factor controlling kinetics. A previous paper  
dealt with the effect of solute concn. on fractional uptake rates of  
phenanthrene and pyrene from a finite aq. source. In this study the  
authors detd. the effect of initial phenanthrene sorbed concn. ( $q_0$ ) on  
the fractional mass desorption rates from each of six soils to a zero-  
concn. soln., approximated by including a polymer adsorbent (Tenax) as a  
third-phase sink. The soils were preequilibrated with phenanthrene for  
180 days. Consistent with theory, the fractional desorption rates detd.  
by empirical curve fitting increased with  $q_0$  provided the isotherm was  
nonlinear. After 500 to 600 days of desorption at the steepest possible  
concn. gradient, all soils retained a highly resistant fraction, which  
ranged from 4 to 31% of  $q_0$ , except for one soil at a high  $q_0$ . The  
highly resistant fraction decreased with increasing  $q_0$  for nonlinear  
isotherm cases, but increased with  $q_0$  for linear or nearly linear  
isotherm cases. Application of a nonlinear diffusion model, the dual-  
mode diffusion model (DMDM), to the nonresistant fraction gave  
reasonably good fits. The DMDM attributes the increase with concn. of  
the apparent diffusivity to a decrease in the proportion of sorbate  
occupying immobile sites (holes) in soil org. matter. The concn.-  
dependent term in the expression for the apparent diffusivity correlated  
with either of two indexes that reflect the linearity of the sorption  
isotherm. Bunker C oil present in one soil acted as a partition domain.  
The findings of this study are consistent with heterogeneous models of  
soil org. matter, and indicate that concn. effects should be taken into  
account whenever desorption rate is important.

L11 ANSWER 14 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 137:278611 CA  
TI Sorption strength of persistent organic pollutants in particle-size  
fractions of urban soils  
AU Krauss, Martin; Wilcke, Wolfgang  
CS Institute of Soil Science and Soil Geography, University of Bayreuth,  
Bayreuth, D-95440, Germany  
SO Soil Science Society of America Journal (2002), 66(2), 430-437  
AB The bioavailability of persistent org. pollutants in soils depends on  
their sorption strength that may vary among different pools. The  
authors hypothesized that polycyclic arom. hydrocarbons (PAHs) and  
polychlorinated biphenyls (PCBs) had different soil org. C-water  
partition coeffs. ( $K_{oc}$ ) among particle-size fractions. The concns. of  
20 PAHs and 12 PCBs were detd. in coarse-sand, fine-sand, silt, and clay  
fractions of 11 urban topsoils (0-5 cm). The  $K_{oc}$  values were detd.  
using sequential extn. with methanol-water mixts. (35 and 65% methanol)

at 60°. The  $\Sigma 20$  PAHs concns. ranged from 0.3 to 186 mg kg<sup>-1</sup>, and the  $\Sigma 12$  PCBs concns. from 1.2 to 158  $\mu\text{g kg}^{-1}$ . In most soils, the PAH concns. decreased in the order silt > clay  $\geq$  fine sand > coarse sand, and those of the PCBs in the order clay > silt  $\geq$  fine sand > coarse sand. The distribution of PAHs among particle-size fractions was more heterogeneous than reported in the literature because the soils received PAH-contaminated wastes (ashes, slags, rubble) with varying texture. In all soils, the proportions of two- or three-ring PAHs decreased with decreasing particle size, indicating that the PAH mixt. was increasingly altered. The Koc values of the PAHs were three to 10 times higher than those of the PCBs with similar octanol-water partition coeffs. (Kow). The mean Koc values of all individual PAHs were highest in silt. For all individual PCBs, mean Koc values were highest in clay. The Koc values of PAHs and PCBs varied up to a factor of 100 among the studied soils and particle-size fractions. Particle-size fractions with highest PAH and PCB concns. also showed highest Koc values indicating low bioavailability.

L11 ANSWER 26 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 132:298021 CA  
TI Sorption of selected polycyclic aromatic hydrocarbons on soils in oil-contaminated systems  
AU Walter, T.; Ederer, H. J.; Forst, C.; Stieglitz, L.  
CS Forschungszentrum Karlsruhe GmbH (FZK), Institut für Technische Chemie (ITC-CPV), Karlsruhe, D-76021, Germany  
SO Chemosphere (2000), 41(3), 387-397  
AB Adsorption and desorption behavior of selected polycyclic aromatic hydrocarbons (PAH) on different soils was examined using static and dynamic methods. Based on a system including 4 phases (soil, water, oil adsorbed, oil in emulsion), a model to describe adsorption behavior in the presence of oil was developed. In systems without oil, a similar partitioning behavior in batch and column experiments was observed for all PAH. Thus, distribution coefficients can be calculated from aromatic compound octanol/water coefficient and the soil organic carbon content. The presence of a lipophilic phase significantly affected PAH sorption, usually resulting in a drastic decrease of adsorption with increasing oil content in the system. For the oil-contaminated system, modeling adsorption behavior enabled a more detailed interpretation of experimental observations and calculation of PAH sorption behavior from characteristic parameters of the components involved.

L11 ANSWER 30 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 131:161370 CA  
TI Impact of adsorption and desorption on bioremediation of PAH contaminated estuarine sediments  
AU Antia, J. E.; Tabak, H. H.; Suidan, M. T.  
CS University of Cincinnati, Cincinnati, OH, 45221-0071, USA  
SO International In Situ and On-Site Bioremediation Symposium, 5th, San Diego, Apr. 19-22, 1999 (1999), Volume 8, 283-288. Editor(s): Alleman, Bruce C.; Leeson, Andrea. Publisher: Battelle Press, Columbus, Ohio.  
AB The extent of adsorption and desorption of organic pollutants in sediments

has a major influence on their fate and transport in the environment. Exptl. obtained adsorption/desorption isotherms for 2, 3 and 4-ring polycyclic arom. hydrocarbons (PAHs), a major class of carcinogenic environmental contaminants, are reported. The possible predictive nature of their calcd. octanol-water partition coeffs. for detg. sorption capacities of sediments for PAHs having more than 4 carbon rings, is also explored.

L11 ANSWER 31 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 130:71079 CA  
TI Adsorption-Partitioning Uptake of Nine Low-Polarity Organic Chemicals on a Natural Sorbent  
AU Xia, Guoshou; Ball, William P.  
CS Department of Geography and Environmental Engineering, The Johns Hopkins University, Baltimore, MD, 21218, USA  
SO Environmental Science and Technology (1999), 33(2), 262-269  
AB Sorption of comparatively nonpolar org. chems. by natural solids not only can be predominated by partitioning with org. matter but also can reflect a substantial contribution from adsorption at low relative concn. Sorption of nine polycyclic arom. hydrocarbons (PAHs) and chlorinated benzenes (CBs) was studied on a subsurface aquitard through batch study, with results interpreted by a composite adsorption-partitioning model. For both PAHs and CBs, the low-concn. adsorption slope and the coeff. for partitioning each correlated well with Kow; however, PAHs consistently sorbed more strongly than CBs at given Kow. For all chems., adsorption contributions were only important at low relative concn. and could be successfully modeled by assuming either Langmuir-type or Polanyi-type isotherms. Isotherms for all liq. chems. fell on a single isotherm when plotted on a Polanyi basis (adsorbed vol. per mass of sorbent vs. adsorption potential d.), providing evidence that a pore-filling phenomenon is involved. Adsorbed vols. of solid chems. were obsd. to be less than those of liqs. at the same adsorption potential d., consistent with a redn. in packing efficiency and as previously reported for activated carbons. These results suggest that the adsorption contribution is from pore filling within microporous solids.

L11 ANSWER 37 OF 88 CA COPYRIGHT 2008 ACS on STN  
AN 128:7060 CA  
TI Partition Characteristics of Polycyclic Aromatic Hydrocarbons on Soils and Sediments  
AU Chiou, Cary T.; McGroddy, Susan E.; Kile, Daniel E.  
CS Denver Federal Center, U.S. Geological Survey, Denver, CO, 80225, USA  
SO Environmental Science and Technology (1998), 32(2), 264-269  
AB The partition behavior was detd. for naphthalene, phenanthrene, and pyrene from water to a range of soil and sediment samples. The measured partition coeffs. of the individual PAHs between soil/sediment org. matter (SOM) and water (i.e., Koc values) are relatively invariant either for the clean (uncontaminated) soils or for the clean sediments; however, the mean Koc values on the sediments are about twice the values on the soils. This disparity is similar to the earlier observation for other nonpolar solutes and reflects the compositional differences between soil and sediment org. matters. No significant differences in

Koc are obsd. between a clean coastal marine sediment and freshwater sediments. The coastal sediments that are significantly impacted by org. contaminants exhibit higher Koc values. At given Kow values (octanol-water), the PAHs exhibit much higher Koc values than other relatively nonpolar solutes (e.g., chlorinated hydrocarbons). This effect results from the enhanced partition of PAHs to SOM rather than from lower Kow values of PAHs at given supercooled liq. solute solubilities in water. The enhanced partition of PAHs over other nonpolar solutes in SOM provides an account of the markedly different correlations between log Koc and log Kow for PAHs and for other nonpolar solutes. The improved partition of PAHs in SOM stems apparently from the enhanced compatibility of their cohesive energy densities with those of the arom. components in SOM. The approx. arom. fraction in soil/sediment org. matter was assessed by solid-state <sup>13</sup>C-NMR spectroscopy.

L11 ANSWER 54 OF 88 CA COPYRIGHT 2008 ACS on STN

AN 122:196307 CA

TI Predicting aqueous concentrations of polynuclear aromatic hydrocarbons in complex mixtures

AU Lane, W. F.; Loehr, R. C.

CS Raleigh, NC, 27612, USA

SO Water Environment Research (1995), 67(2), 169-73

AB The release of polynuclear arom. hydrocarbons (PAHs) from buried org. wastes into groundwater occurs over long periods of time. Estn. of the equil. aq. concn. or soly. of PAHs in mixts. of contaminated soil and water can aid in predicting fate and transport processes. Four methods were evaluated for their effectiveness in predicting aq. concns. of 16 PAH compds. The results indicated that a cosolvent method was effective in predicting aq. concns. and that equil. models (Raoult's law) provided ests. within 1 order of magnitude of PAH concns. in complex mixts. Predicted concns. from soil-water partition coeffs. generally were within 1 order of magnitude of actual concns.

L11 ANSWER 70 OF 88 CA COPYRIGHT 2008 ACS on STN

AN 116:193199 CA

TI Estimating the equilibrium aqueous concentrations of polynuclear aromatic hydrocarbons in complex mixtures

AU Lane, William F.; Loehr, Raymond C.

CS Rem. Technol., Inc., Chapel Hill, NC, 27514, USA

SO Environmental Science and Technology (1992), 26(5), 983-90

AB By use of a two-phase liq.-liq. equil. model, the distribution of nonpolar solutes between water (polar phase) and soil org. matter (nonpolar phase) was related to principles of equil. chem. Batch equil. expts. were conducted with field-contaminated soils. Aq. concns. of polynuclear arom. hydrocarbons were measured directly, predicted through the use of org. cosolvents, and calcd. from Raoult's law, thereby providing a three-way comparison of solute behavior in water. Compn. of the nonpolar phase strongly influenced the solute concns. in the polar phase, suggesting that Raoult's law is applicable to complex mixts. Tar-water partitioning expts. demonstrated that the distribution of solutes in complex mixts. is analogous to partitioning among multiple solvents.

L11 ANSWER 87 OF 88 CA COPYRIGHT 2008 ACS on STN

AN 94:89967 CA

OREF 94:14573a,14576a

TI Sorption of polynuclear aromatic hydrocarbons by sediments and soils  
AU Means, Jay C.; Wood, Susanne G.; Hassett, John J.; Banwart, Wayne L.  
CS Cent. Environ. Estuarine Stud., Univ. Maryland, Solomons, MD, 20688, USA  
SO Environmental Science and Technology (1980), 14(12), 1524-8  
AB The sorption of pyrene [129-00-0], 7,12-dimethylbenz[a]anthracene [57-97-6], 3-methylcholanthrene [56-49-5], and 1,2,5,6-dibenzanthracene [53-70-3] on 14 soil and sediment samples exhibiting a wide range of physicochem. properties was studied. The equil. Freundlich consts. (Kd) and linear partition coeffs. (Kp) for each compd. were highly correlated with the org. C content of the soils/sediments tested. No other significant correlations with soil/sediment properties were obsd. The sorption consts. (Kp) when normalized to org. C content of the substrate (Koc) were predictive of the octanol-water partition coeffs. for the compds. tested. A highly significant neg. correlation was obsd. between log Koc and log (water soly.) for these compds. Exptl. values of the water soly. and octanol-water partition coeffs. for the 4 compds. are reported.

=> log y

STN INTERNATIONAL LOGOFF AT 11:21:30 ON 11 FEB 2008